CLAIMS

1. A *Myrothecium* host cell comprising at least one recombinant DNA construct for the modulated expression of homologous genes and/or for the expression of heterologous genes.

2. The host cell according to claim 1 characterized in that said the DNA from said construct integrates into the host cell chromosome and/or is present on an episome.

3. The host cell according to claim 1 or 2 characterized in that said DNA construct comprises a nucleic acid sequence encoding a heterologous protein and/or homologous protein.

4. The host cell according to claim 3 which is a fungal protein.

5. The host cell according to any of the preceding claims characterized in that said DNA construct comprises at least one homologous or heterologous tool that allows or enhances protein expression, said tool being selected from the group consisting of a promoter, a terminator, a polyadenylation signal, a leader, a secretion signal, a selection marker or reporter gene.

6. The host cell according to claim 5 characterized in that said homologous or heterologous selection marker gene is selected from the group consisting of a hygromycine B resistance gene, phleomycin resistance gene, a phosphinothricine resistance gene, acetamidase gene, a pyrG gene, an argB gene, a niaD gene and a trpC gene.

7. The host cell according to claim 5 characterized in that said homologous or heterologous promoter is selected from the group consisting of the *Aspergillus oryzae* TAKA-amylase promoter, the *Rhizomucor miehei* aspartic proteinase promoter, the *A. niger*

gluocamylase promoter, the *A. niger* neutral α-amylase promoter, the *A. niger* acid stable α-amylase promoter, the *R. miehei* lipase promoter and the promoters of the glycolytic enzymes genes GPD, PGK and ADH.

8. The host cell according to claim 5 characterized in that said promoter is regulatable.

9. The host cell according to any of the preceding claims selected from the group of *Myrothecium* sp. consisting of *Myrothecium inundatum*, *Myrothecium prestonii*, *Myrothecium leucotrichum*, *Myrothecium cinctum*, *Myrothecium masonii*, *Myrothecium roridum*, *Myrothecium verrucaria*, *Myrothecium carmichaelii*, *Myrothecium lachastrae*, *Myrothecium atrum*, *Myrothecium atroviride*, *Myrothecium gramineum* (syn. *Xepiculopsis graminae*).

10. The host cell according to claim 9 characterized in that said host cell is selected from the group consisting of the *Myrothecium gramineum* strain MUCL39210, the *Myrothecium gramineum* strain CBS449.71, the *Myrothecium gramineum* IMI140595, the *Myrothecium gramineum* IMI290405 and the *Myrothecium verrucaria* strain CBS328.52.

11. The host cells according to according to claim 9 characterized in that said host cell is the *Myrothecium gramineum* strain MUCL39210.

12. The host cell according to any of the preceding claims comprising a PCNS43 or a p3SR2 vector.

13. The use of a host cell according to any of claims 1 to 12.

14. The use of a host cell according to any of claims 1 to 12 as cell factory

15. The use of a host cell according to any of claims 1 to 12 for industrial enzyme and/or protein production.

16. The use according to claim 15 wherein said protein and/or enzyme is a therapeutic drug.

17. The use of a host cell according to any of claims 1 to 12 as source of biopesticide.

18. A method of transforming *Myrothecium* sp., said method comprising the steps of:

- growing *Myrothecium* cells or protoplasts;
- generating a host cell according to any of claims 1 to 12 by introducing into said cells or protoplasts at least one recombinant DNA construct for the modulated expression of homologous genes and/or for the expression of heterologous genes into *Myrothecium* cells; and
- selecting genetically modified *Myrothecium* cells.

19. The method according to claim 18 wherein said DNA construct is a plasmid or a vector.

20. A transformed *Myrothecium* strain obtainable by a method according to claim 18 or 19.

21. A transformant according to claim 20 with increased amylase activity, increased xylanase activity, increased growth rate, increased biomass production and/or reduced protease production.

22. The transformant according to claim 20 or 21 with an altered metabolic pathway compared to the non-transformed *Myrothecium* strain.

23. A method for producing a protein of interest, said method comprising the steps of:

- culturing *Myrothecium* host cells according to any of claims 1 to 12 under conditions which permit expression of the protein; and
- recovering the protein from said *Myrothecium* culture.

24. The method according to claim 23 wherein said protein is a fungal protein.

25. The method according to claim 23 or 24 wherein said protein is an enzyme.